US-PAT-NO: 6421767
DOCUMENT-IDENTIFIER: US 6421767 B1

TITLE: Method and apparatus for managing a storage system using snapshot copy operations with snap groups

DATE-ISSUED: July 16, 2002

US-CL-CURRENT: 711/162; 707/204 ; 711/111 ; 711/112 ; 711/114 ; 711/152 ; 711/161

APPL-NO: 09/ 511886

DATE FILED: February 23, 2000

---------- KWIC ---------

Brief Summary Text - BSTX:

A data file snapshot copy is an improvement over this type of copy process. This snapshot copy process includes a dynamically mapped virtual data storage subsystem. This subsystem stores data files received from a processor in back-end data storage devices by mapping the processor assigned data file identifier to a logical address that identifies the physical storage location

of the data. This dynamically mapped virtual data storage subsystem performs a copy of a data file by creating a duplicate data file pointer to a data file identifier in a mapping table to reference the original data file. In this dynamically mapped virtual data storage subsystem, the data files are referred to as a collection of "virtual tracks" and each data file is identified by unique virtual track addresses (VTAs). The use of a mapping table provides the opportunity to replace the process of copying the entirety of a data file in the data storage devices with a process that manipulates the contents of the mapping table. A data file appears to have been copied if the name used to identify the original data file and the name used to identify the copy data file are both mapped to the same physical data storage location.

Detailed Description Text - DETX:

Further, the use of snap groups restricts which virtual volumes are allowed to be paired for a snapshot copy operation. According to the present invention, when selecting a source virtual volume for a snapshot copy operation, the target virtual volume must be a virtual volume within the same snap group rather than any virtual volume in the storage subsystem.

Detailed Description Text - DETX:

These virtual track table pages each contain an entry for each virtual track.
Also located within each virtual track table page is data, which defines the
logical address of a copy of the virtual track table page comprising a virtual
track table page instance, which has been written on back-end data storage
devices during the snapshot copy or write operation. These back-end storage
devices may be, for example, storage devices 202 in storage subsystem 200 in
FIG. 2. This logical address identifies the physical storage location in the
back-end data storage devices that contains the most recently written instance
of the present virtual track table page.